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EXAMINER	
KIM, EDWARD J	
ART UNIT	PAPER NUMBER
2455	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,251	MIZUGUCHI ET AL.	
	Examiner	Art Unit	
	EDWARD J. KIM	2455	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-46* is/are pending in the application.

4a) Of the above claim(s) *1-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment filed on 08/24/2009.

2. Claims 24-46 are pending in this office action. Claims 1-23 have been previously cancelled by the Applicant. Claim 31 has been amended.

Response to Amendment

3. The examiner withdraws previous objection to claim 31, in view of the Amendment.

Response to Arguments

4. Applicant's arguments filed 08/24/2009 have been fully considered but they are not persuasive.

The Applicant argues that prior art of record fail to disclose,

> "when the reception section detects the cessation of the electric signal sent from the preceding device, the data transmission device enters a "power down mode" (i.e., power is no longer supplied to the processing, reception and transmission sections and the reception and transmission sections stop operating)." (refer to second paragraph of pg.18 of the Amendment filed on 08/24/2009)

Furthermore, the Applicant argues,

> "there is no disclosure or suggestion in Schoenfeld, Ku and the APA or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Schoenfeld, Ku and the APA to obtain the invention of independent claim 24." (refer to second to last paragraph of pg.19 of the Amendment filed on 08/24/2009).

In response:

Schoenfeld discloses a prior art system (upon which the invention improves on) wherein "a circuit within an electronic device temporarily shuts down during relatively long periods of unuse" (Schoenfeld, col.1 ln.11-13). Ku discloses a system and method related to optimizing

power consumption of pipelined circuit (Ku, Abstract, col.1 ln.7-10) and further discloses that the pipelined circuit is shut-down in case of a shut-down criteria is met, such as inactivity in the reception section of the device (Ku, fig.1, col.1 ln.15-37, col.1 ln.55-col.2 ln.27, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claims 1-3). Furthermore, AAPA discloses that the following was known at the time the invention was made: use of signals for operation of the system on a ring network, and that "while the network is not used, it is required that a mode (hereinafter referred to as a "zero-power mode") be available in which operation is suspended by turning off main hardware..." (AAPA, [0006]-[0007]).

Therefore, Schoenfeld discloses that shut-down sequence is performed during periods of unuse. In the field of art, when devices are not used, it means that there are no data or signals inputted for processing by the device, that there are no transitions in the input. For further clarification, the Examiner has provided evidence via Ku and AAPA. Cessation of signal received by the reception section refers to no signal or data being inputted to the reception section, which translates to inactivity by the device and inactivity at the reception section.

Therefore, the prior arts of record render the claimed invention obvious to one of ordinary skill in the art at the time the invention was made.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 24-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenfeld et al. (US Patent #6,816,994 B2), hereinafter referred to as Schoenfeld, in view of Ku (US Patent #6,907,534 B2), further in view of AAPA (Applicant Admitted Prior Art).

7. Summary of the claimed invention as a whole:

The claims are directed towards a system and method for conserving power consumption on ring-type computer networks, wherein power to the receiving section, transmitting section, and the processing section are cut-off, while a separate monitoring section monitors for a wake-up signal (that matches a certain criteria) to resume supplying power to those sections. The network devices on the ring-type network are subsequently powered down.

Summary of rejection:

Schoenfeld discloses a system and method wherein buffers are used to detect transitions in the power-consumption mode of an electronic device. Electronic devices have low-power consumption or "sleep" mode in which a circuit within an electronic device temporarily shuts down during relatively long periods of unuse. Schoenfeld further discloses that the electronic device is shut-down, wherein the receiving section, processing section, and transmitting sections are shut-down, during detection of power-down condition such as "inactivity" (no reception of signal). The lower-power buffers detects power-up condition and follows wake-up protocol for the receiving section, processing section, and transmitting sections, hence powering up the electronic device. (Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1.)

Ku discloses a system and method related to power consumption of pipelined circuit in a computer chip (Ku, Abstract, col.1 ln.7-10). Ku further explicitly discloses control sections that control power to individual sections of the circuit (col.1 ln.15-37, col.1 ln.55 - col.2 ln.27). Ku further discloses that the pipelined circuit is shut-down in case of a shut-down criteria is met, such as inactivity in the reception section of the device. Furthermore, Ku discloses turn-on procedure when detection of certain criteria is met (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks (AAPA, Background Art section of the Applciation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Schoenfel with those of Ku, to incorporate control section that controls the power supply to various parts of the system. One would have been motivated to modify the teachings of Schoenfeld with those of Ku, since both are related arts for power-consumption in electronic devices, wherein the electronic devices are powered-down during inactivity/no reception of signals to be processed. It would have been obvious to further modify the teachings of Schoenfeld and Ku to be implemented on ring topology networks, as shown by the Applicant, this was a commonly utilized network topology at the time the invention was

made. When the system disclosed by Schoenfeld and Ku are implemented on a ring-type network, the resulting system is analogous to the claimed invention as a whole. Therefore, the combination of Schoenfeld, Ku, and AAPA teaches every aspect of the claimed invention.

8. Schoenfeld discloses a system and method for conserving power consumption by a computer network device by powering off higher-current buffers (used for receiving, processing, and transmitting data) when inactivity is acknowledged, while a lower-current buffer detects wake-up signals for powering on the higher-current buffers (Abstract, fig.1-4).

Claim 24 (Currently Amended) A data transmission device connected to a ring-type data transmission network, and for electrically communication with other devices of the ring-type data transmission network via a transmission line in a unidirectional manner, such that the data transmission device receives an electric signal only from a preceding device of the ring-type data transmission network and the data transmission device transmits an electric signal only to a successive device of the ring-type data transmission network, the data transmission device comprising:

a processing section for processing (i) received data and (ii) data to be transmitted based on a predetermined communications protocol;

a reception section for receiving an electric signal sent from the preceding device of the ring-type data transmission network and for outputting data contained in the received electric signal to the processing section;

a transmission section for converting a result of the processing by the processing section into an electric signal and for transmitting the electric signal converted from the result to the successive device of the ring-type data transmission network;

a power supply section for supplying power to the processing section, the reception section,

and the transmission section; and

a control section for controlling an operation of the processing section, the reception section, and the transmission section in accordance with an operation mode of the data transmission device

wherein the reception section detects a cessation of the electric signal sent from the preceding device,

wherein, when the reception section detects the cessation of the electric signal sent from the preceding device, the power supply section stops supplying power to the processing section, the reception section, and the transmission section,

wherein, when one of (i) the cessation of the electric signal sent from the preceding device is detected and (ii) the supply of power from the power supply section is stopped, the reception section stops operating, and

wherein, when one of (i) the reception section detects the cessation of the electric signal sent from the preceding device, and (ii) the supply of power from the power supply section is

stopped, the transmission section stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive device.

Schoenfeld discloses a system and method wherein buffers are used to detect transitions in the power-consumption mode of an electronic device. Electronic devices have low-power consumption or "sleep" mode in which a circuit within an electronic device temporarily shuts down during relatively long periods of unuse. Schoenfeld further discloses that the electronic device is shut-down, wherein the receiving section, processing section, and transmitting sections are shut-down, during detection of power-down condition such as "inactivity" (no reception of signal). The lower-power buffers detects power-up condition and follows wake-up protocol for the receiving section, processing section, and transmitting sections, hence powering up the electronic device. (Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1.)

Ku discloses a system and method related to power consumption of pipelined circuit in a computer chip (Ku, Abstract, col.1 ln.7-10). Ku further explicitly discloses control sections that control power to individual sections of the circuit (col.1 ln.15-37, col.1 ln.55 - col.2 ln.27). Ku further discloses that the pipelined circuit is shut-down in case of a shut-down criteria is met, such as inactivity in the reception section of the device. Furthermore, Ku discloses turn-on procedure when detection of certain criteria is met (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks (AAPA, Background Art section of the Applciation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Schoenfeld with those of Ku, to incorporate control section that controls the power supply to various parts of the system. One would have been motivated to modify the teachings of Schoenfeld with those of Ku, since both are related arts for power-consumption in electronic devices, wherein the electronic devices are powered-down during inactivity/no reception of signals to be processed. It would have been obvious to further modify the teachings of Schoenfeld and Ku to be implemented on ring topology networks, as shown by the Applicant, this was a commonly utilized network topology at the time the invention was made.

When the system disclosed by Schoenfeld and Ku are implemented on a ring-type network for conserving power consumption, the resulting system is analogous to the claimed invention as a whole. Therefore, the combination of Schoenfeld, Ku, and AAPA teaches every aspect of the claimed invention.

Claim 25 (Currently Amended) The data transmission device according to claim 24,wherein, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal indicating the cessation of the electric signal, and wherein, based on the data cessation signal transmitted from the reception section, the control section stops the operation of the processing section.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 26 (Currently Amended) The data transmission device according to claim 24, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal indicating the cessation of the electric signal,

wherein, based on the data cessation signal transmitted from the reception section, the control section outputs a signal for stopping the operation of the reception section and the transmission section,

wherein, in response to the signal for stopping the operation of the reception section and the transmission section output from the control section, the reception section stops operating, and

wherein, in response to the signal for stopping the operation of the reception section and the transmission section output from the control section, the transmission section stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 27 (Currently Amended) The data transmission device according to claim 24,

wherein, when the cessation of the electric signal sent from the preceding device is detected, the reception section transmits, to the control section, a data cessation signal for indicating the cessation of the electric signal, and

wherein, based on the data cessation signal transmitted from the reception section, the control section stops the power supply section from supplying power to the processing section, the reception section, and the transmission section.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 28 (Currently Amended) The data transmission device according to claim 27, further comprising a signal monitoring section for detecting the electric signal sent from the preceding device and transmitting, to the control section, an electric-signal detection signal for indicating the detection of the electric signal sent from the preceding device,

wherein, when a suspended sending of the electric signal sent from the preceding device is resumed, the signal monitoring section detects the electric signal sent from the preceding device, and transmits, to the control section, the electric-signal detection signal,

wherein, based on the electric-signal detection signal transmitted from the signal monitoring section, the control section allows the power supply section to start supplying power to the processing section, the reception section, and the
transmission section: to respectively start the operation of the processing section, the reception section, and the transmission section, and

wherein, by control of the control section, the transmission section starts operating and starts transmitting the electric signal to the successive device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 29 (Currently Amended) The data transmission device according to claim 28, wherein the electric signal, which the transmission section sends to the successive device after starting operating by control of the control section is a lock signal for establishing clock synchronization.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 30 (Previously Presented) The data transmission device according to claim 24, wherein the communications protocol used by the processing section is defined by Media Oriented Systems Transport (MOST).

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3) The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks and MOST, which is a standard protocol on ring LAN (AAPA, Background Art section of the Applciation).

Claim 31 (Currently Amended) A data transmission system including a plurality of data transmission devices connected via a transmission line so as to form a ring structure, in which the data transmission devices electrically communicate with one another in a unidirectional manner, such that each data transmission device receives an electric signal only from a preceding data transmission device of the plurality of data transmission devices and each data transmission device transmits an electric signal only to a successive data transmission device of the plurality of data-transmission devices,

each respective data transmission device of the plurality of data transmission devices comprising:

a processing section for processing (i) received data and (ii) data to be transmitted based on a predetermined communications protocol;

a reception section for receiving an electric signal sent from the preceding data transmission device and for outputting data contained in the received electric signal to the processing section;

a transmission section for converting a result of the processing by the processing section into an electric signal and for transmitting the electric signal converted from the result to the successive data transmission device;

a power supply section for supplying power to the processing section, the reception section, and the transmission section of; and

a control section for controlling an operation of the processing section, the reception section, and the transmission section in accordance with an operation mode of the respective data transmission device

wherein, in one data transmission device of the plurality of data transmission devices, the control section of the one data transmission device stops the operation of the processing section, the reception section, and the transmission section, of the one data transmission device based on a predetermined condition for shift, and the transmission section of the one data transmission device stops transmission of the electric signal, and

wherein, in another data transmission device of the plurality of data transmission devices, the reception section of the another data transmission device detects a cessation of the electric signal sent from the preceding data transmission device,

when the reception section of the another data transmission device detects the cessation of the electric signal sent from the preceding data transmission device, the power supply section of the another data transmission device stops supplying power to the processing section, the reception section, and the transmission section, of the another data transmission device,

wherein one of (i) the cessation of the electric signal sent from the preceding data transmission device is detected, and (ii) the supply of power from the power supply section of the another data transmission device is stopped, the reception section of the another data transmission device stops operating, and wherein either one of (i) the reception section of the another data transmission device detects the cessation of the electric signal sent from the preceding data transmission device, and (ii) the supply of power from the power supply section of the another data transmission device is stopped, the transmission section of the another data transmission device stops operating and stops transmitting the electric signal converted from the result of the processing by the processing section to the successive data transmission device.

Schoenfeld discloses a system and method wherein buffers are used to detect transitions in the power-consumption mode of an electronic device. Electronic devices have low-power consumption or "sleep" mode in which a circuit within an electronic device temporarily shuts down during relatively long periods of unuse. Schoenfeld further discloses that the electronic device is shut-down, wherein the receiving section, processing section, and transmitting sections are shut-down, during detection of power-down condition such as "inactivity" (no reception of signal). The lower-power buffers detects power-up condition and follows wake-up protocol for the receiving section, processing section, and transmitting sections, hence powering up the electronic device. (Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1.)

Ku discloses a system and method related to power consumption of pipelined circuit in a computer chip (Ku, Abstract, col.1 ln.7-10). Ku further explicitly discloses control sections that control power to individual sections of the circuit (col.1 ln.15-37, col.1 ln.55 - col.2 ln.27). Ku further discloses that the pipelined circuit is shut-down in case of a shut-down criteria is met, such as inactivity in the reception section of the device. Furthermore, Ku discloses turn-on procedure when detection of certain criteria is met (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks (AAPA, Background Art section of the Applciation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Schoenfeld with those of Ku, to incorporate control section that controls the power supply to various parts of the system. One would have been motivated to modify the teachings of Schoenfeld with those of Ku, since both are related arts for power-consumption in electronic devices, wherein the electronic devices are powered-down during inactivity/no reception of signals to be processed. It would have been obvious to further modify the teachings of Schoenfeld and Ku to be implemented on ring topology networks, as shown by the Applicant, this was a commonly utilized network topology at the time the invention was made.

When the system disclosed by Schoenfeld and Ku are implemented on a ring-type network for conserving power consumption, the resulting system is analogous to the claimed invention as a whole. Therefore, the combination of Schoenfeld, Ku, and AAPA teaches every aspect of the claimed invention.

Claim 32 (Currently Amended) The data transmission system according to claim 31, wherein, in the another data transmission device

when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the another data transmission device transmits, to the control section of the another data transmission device, a data cessation signal indicating the cessation of the electric signal, and

based on the data cessation signal transmitted from the reception section of the another data transmission device, the control section of the another data transmission device stops the operation of the processing section of the another data transmission device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 33 (Currently Amended) The data transmission system according to claim 31, wherein, in the another data transmission device

when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the another data transmission device transmits, to the control section of the another data transmission device, a data cessation signal indicating the cessation of the electric signal,

based on the data cessation signal transmitted from the reception section of the another data transmission device, the control section of the another data transmission device outputs a signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device,

in response to the signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device output from the control section of the another data transmission device the reception section of the another data transmission device stops operating, and

in response to the signal for stopping the operation of the reception section of the another data transmission device and the transmission section of the another data transmission device output from the control section the transmission section of the another data transmission device stops operating and stops transmitting the electric signal converted from the result of the

processing by the processing section the another data transmission device to the successive data transmission device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 34 (Currently Amended) The data transmission system according to claim 31,

wherein, when the cessation of the electric signal sent from the preceding data transmission device is detected, the reception section of the data transmission device transmits, to the control section of the data transmission its own device, a data cessation signal for indicating the cessation of the electric signal, and

wherein, based on the data cessation signal transmitted from the reception section of the data transmission device, the control section of the data transmission device stops the power supply section of the data transmission device from supplying power to the processing section, the reception section, and the transmission section, of the data transmission device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 35 (Currently Amended) The data transmission system according to claim 34,

wherein each data transmission device of the plurality of data transmission devices further comprises a signal monitoring section for detecting the electric signal sent from the preceding data transmission device and transmitting, to the control section, an electric-signal detection signal-f~ indicating the detection of the electric signal sent from the preceding data transmission device,

wherein, in one data transmission device of the plurality of data transmission devices, based on a predetermined return condition, (i) the control section allows the power supply section to start supplying power to each processing section, reception section, and transmission section that is in a stopped state to respectively start the operation of each processing section, reception section, and the transmission section that is in the stopped state, and (ii) the transmission section resumes the transmission of the electric signal, and

wherein, in another data transmission device of the plurality of data transmission devices,

when a suspended sending of the electric signal sent from the preceding data transmission device is resumed, the signal monitoring section detects the electric signal sent from the preceding data transmission device, and transmits, to the control section of the another data transmission device, the electric-signal detection signal

based on the electric-signal detection signal transmitted from the signal monitoring section, the control section allows the power supply section to start supplying power to the processing section, the reception section, and the transmission section of the another data transmission device to respectively start the operation of the processing section, the reception section, and the transmission section of the another data transmission device; and

the transmission section of the another data transmission device starts operating and starts transmitting the electric signal to the successive data transmission device.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 36 (Currently Amended) The data transmission system according to claim 35, wherein the electric signal, which each respective transmission section of the plurality of data transmission devices sends to the successive data transmission device after starting operating by control of the respective control section~ is a lock signal for establishing clock synchronization with each respective transmission section.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 37 (Currently Amended) The data transmission system according to claim 36, wherein the data transmission device of the plurality of data transmission devices that resumes the transmission of the electric signal based on the predetermined return condition is a master, which performs data transmission using a clock thereof and is connected to the data transmission system.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 38 (Previously Presented) The data transmission system according to claim 31, wherein the communications protocol used by the processing section is defined by Media Oriented Systems Transport (MOST).

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3) The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks and MOST, which is a standard protocol on ring LAN (AAPA, Background Art section of the Applciation).

Claim 39 (Currently Amended) A data transmission method in which a plurality of nodes are connected via a transmission line so as to form a ring structure, in which the nodes electrically communicate with one another in a unidirectional manner, such that each node receives an electric signal only from a preceding node of the plurality of nodes and each node transmits an electric signal only to a successive node of the plurality of nodes, the data transmission method comprising:

a processing step, performed by each node, of processing received data and processing data to be transmitted based on a predetermined communications protocol;

a reception step, performed by each node, of receiving an electric signal sent from the preceding node and sending data contained in the received electric signal to the processing step;

a transmission step, performed by each node, of transmitting a result of a process by the processing step to-a the successive node as an electric signal;

a power supply step of supplying power used for an operation of the processing step, the reception step, and the transmission step; and

a control step, performed by each node, of controlling an operation of the processing step, the reception step, and the transmission step in accordance with an operation mode,

wherein, in one node of the plurality of nodes, the control step stops the operation of the processing step, the reception step, and the transmission step of the one node based on a predetermined condition for shift, and the transmission step stops transmitting the electric signal, and

wherein, in another node of the plurality of nodes,

the reception step detects a cessation of the electric signal sent from the preceding node,

when the reception step detects the cessation of the electric signal sent from the preceding node, the power supply step stops supplying power used for the operation of the processing step, the reception step, and the transmission step,

when one of (i) the cessation of the electric signal sent from the preceding node being detected and (ii) the supply of power by the power supply step is stopped, the reception step stops operation, and

when one of (i) the reception step detects the cessation of the electric signal sent from the preceding node and (ii) the supply of power by the power supply step stops supplying power, the transmission step stops operation and stops transmitting the electric signal to the successive node.

Schoenfeld discloses a system and method wherein buffers are used to detect transitions in the power-consumption mode of an electronic device. Electronic devices have low-power consumption or "sleep" mode in which a circuit within an electronic device temporarily shuts down during relatively long periods of unuse. Schoenfeld further discloses that the electronic device is shut-down, wherein the receiving section, processing section, and transmitting sections are shut-down, during detection of power-down condition such as "inactivity" (no reception of signal). The lower-power buffers detects power-up condition and follows wake-up protocol for the receiving section, processing section, and transmitting sections, hence powering up the electronic device. (Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1.)

Ku discloses a system and method related to power consumption of pipelined circuit in a computer chip (Ku, Abstract, col.1 ln.7-10). Ku further explicitly discloses control sections that control power to individual sections of the circuit (col.1 ln.15-37, col.1 ln.55 - col.2 ln.27). Ku further discloses that the pipelined circuit is shut-down in case of a shut-down criteria is met, such as inactivity in the reception section of the device. Furthermore, Ku discloses turn-on procedure when detection of certain criteria is met (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

The Applicant has admitted that it was prior art and well-known in the art, at the time the invention was made, to utilize ring topology networks (AAPA, Background Art section of the Applciation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Schoenfeld with those of Ku, to incorporate control section that controls the power supply to various parts of the system. One would have been motivated to modify the teachings of Schoenfeld with those of Ku, since both are related arts for power-consumption in electronic devices, wherein the electronic devices are powered-down during inactivity/no reception of signals to be processed. It would have been obvious to further modify

the teachings of Schoenfeld and Ku to be implemented on ring topology networks, as shown by the Applicant, this was a commonly utilized network topology at the time the invention was made.

When the system disclosed by Schoenfeld and Ku are implemented on a ring-type network for conserving power consumption, the resulting system is analogous to the claimed invention as a whole. Therefore, the combination of Schoenfeld, Ku, and AAPA teaches every aspect of the claimed invention.

Claim 40 (Currently Amended) The data transmission method according to claim 39, wherein, in the another node,

when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step a notification indicating the cessation of the electric signal, and

based on the notification sent by the reception step, the control step stops the operation of the processing step

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 41 (Currently Amended) The data transmission method according to claim 39, wherein, in the another node,

when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step a notification indicating the cessation of the electric signal,

based on the notification sent by the reception step, the control step sends a notification for stopping the operation of the reception step and the transmission step,

in response to the notification for stopping the operation of the reception step and the transmission step sent by the control step, the reception step stops operation, and

in response to the notification for stopping the operation of the reception step and the transmission step sent by the control step the transmission step stops operation and stops, transmitting the electric signal to the successive node.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 42 (Currently Amended) The data transmission method according to claim 39,

wherein, in the another node, when the cessation of the electric signal sent from the preceding node is detected, the reception step sends, to the control step a notification indicating the cessation of the electric signal, and

wherein, in the another node, based on the notification sent by the reception step the control step stops the power supply step from supplying power used for the operation of the processing step, the reception step, and the transmission step.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 43 (Currently Amended) The data transmission method according to claim 42, wherein each node of the plurality of nodes further comprises a signal monitoring step of detecting the electric signal sent from the preceding node and sending, to the control step, a notification indicating the detection of the electric signal,

wherein, in one node of the plurality of nodes, based on a predetermined return condition, (i) the control step allows the power supply step to start supplying power used for the operation of each processing step, reception step, and transmission step that is in a stopped state to respectively start the operation by each processing step, reception step, and transmission step that is in the stopped state, and (ii) the transmission step resumes the transmission of the electric signal, and

wherein, in another node of the plurality of nodes,

when a suspended sending of the electric signal sent from the preceding node is resumed, the signal monitoring step detects the electric signal sent from the preceding node, and sends, to the control step the notification indicating the detection,

based on the notification indicating the detection sent by the signal monitoring step, the control step. allows the power supply step to start supplying power used for the operation of the processing step, the reception step, and the transmission step to respectively start the operation by the processing step, the reception step, and the transmission step, and

the operation by the transmission step is started to start the transmitting of the electric signal to the successive node.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 44 (Currently Amended) The data transmission method according to claim 43, wherein the electric signal: which each respective transmission step of each node sends to the successive node after starting operation by control of the respective control step~ is a lock signal for establishing clock synchronization with each respective node.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 45 (Currently Amended) The data transmission method according to claim 44, wherein the node that resumes the transmission of the electric signal based on the predetermined return condition is a master, which performs data transmission using a clock thereof.

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3).

Claim 46 (Previously Presented) The data transmission method according to claim 39, wherein the communications protocol used by the processing step is defined by Media Oriented Systems Transport (MOST).

(Schoenfeld, Abstract, fig.1-4, col.1 ln.1-47, col.2 ln.8-17, col.3 ln.1-55, col.6 ln.61-67, claim 1) (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3). An example of the invention is disclosed by Ku, wherein these criterions are detected by the front-end transition detection and back-end transition detection units (Ku, fig.1, col.3 ln.14-24, col.3 ln.54-62, col.4 ln.44-65, claim 1-3) The Applicant has admitted that it was prior art and well-known in the art, at

the time the invention was made, to utilize ring topology networks and MOST, which is a standard protocol on ring LAN (AAPA, Background Art section of the Application).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD J. KIM whose telephone number is (571)270-3228. The examiner can normally be reached on Monday - Friday 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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